



**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
AIR QUALITY PERMIT No. 81660**

**I. INTRODUCTION**

This Class I operating permit renewal is for the operation of Lhoist of North America Inc.'s Douglas Lime Plant, which is located near Douglas, Arizona. Permit No. 81660 renews and supersedes Permit No. 61785.

**A. Company Information**

Facility Name: Douglas Lime Plant  
Mailing Address: 4753 W. Paul Spur Road, Douglas, Arizona 85607  
Facility Location: 4753 W. Paul Spur Road, Douglas, Arizona 85607

**B. Attainment Classification**

The Paul Spur area is designated as non-attainment for Particulate Matter with an aerodynamic diameter of less than 10 microns (PM<sub>10</sub>). The area is designated as unclassified for all other pollutants.

**II. PROCESS DESCRIPTION**

**A.** This facility manufactures lime from limestone. The limestone processing plant consists of a quarry and a crushing and screening plant. This part of the process produces crushed and sized limestone for the lime manufacturing operation and for other local uses. The lime manufacturing operation consists of three kilns and a number of other pieces of equipment for handling limestone, solid fuel and kiln lime product.

**B. Kiln Description and Control Technology**

**1. Kiln 1**

Kiln 1, manufactured by Kennedy Van Saun, is a gravity feed type kiln equipped with a stone preheater. The kiln has the capability of being fired with natural gas, coal, petroleum coke, or any combination of these fuels. Kiln 1 has a diameter of 10 feet, a length of 150 feet, and has a daily production capacity of 200 short tons of quicklime. Particulate emissions from the kiln are controlled with the use of a cyclone and a Rexnord gravel-bed dust collector.

**2. Kiln 2**

Kiln 2, a gravity feed rotary kiln manufactured by Traylor, was installed in December 1970. This kiln has the capability of being fired with natural gas, coal, petroleum coke, on-specification used oil, or any combination of such fuels. The kiln has a diameter of ten feet and a length of 300 feet, and has a daily capacity of 550 short tons of quicklime. The kiln is controlled by a baghouse (DC-356)

### 3. Kiln 3

Kiln 3 is a twin shaft vertical kiln, fired with natural gas and/or oil, which was manufactured by Maerz and installed in 1979. The kiln has a production rate of 460 short tons of quicklime per day. The kiln operates in a continuous mode and utilizes kiln gases to preheat the raw feed stone. The limestone placed into the top of the kiln heats up and changes into quicklime as it travels vertically down the kiln. Lime is discharged from the shafts by internal material support tables at the bottom of the kiln. Product cooling air and combustion air are generated by positive displacement blowers. Particulate emissions are controlled with a Ducon wet scrubber.

## C. Alternative Operating Scenarios

### 1. Alternative Operating Scenario 1 – (AOS-1)

Under AOS-1, the Permittee will suspend quarry, crushing, and kiln operations. All process equipment not in operation will be maintained in good operating order which will require periodic, temporary operation to perform maintenance. This maintenance will involve mechanical operation of the equipment without any process material.

The lime handling systems for Kilns 1, 2, and 3 will be used as a transfer terminal under AOS-1. Process rates for the lime handling will be 400 tons per day and 50,000 tons per year.

### 2. Alternative Operating Scenario 2 – (AOS-2)

Under AOS-2, all daily operations at the quarry and lime plant will be in “Care and Maintenance” mode. During this operating scenario, all equipment will be maintained in good operating order which will require periodic, temporary operation to perform maintenance. This maintenance will involve mechanical operation of the equipment, but without any process material.

Mobile traffic will consist of security personnel patrolling the plant site 8 to 12 times per day, U.S. Border Patrol and maintenance personnel occasionally traveling to various locations within the plant.

### 3. Alternative Operating Scenario 3 – (AOS-3)

AOS-3 entails the startup and operation of one or more process areas. For any given process area that is brought into operation, all initial monitoring and recordkeeping as originally required under normal operations will be followed to demonstrate compliance with the applicable requirements for each process area.

## III. CURRENT OPERATING STATUS

On January 16, 2009, Lhoist North America notified ADEQ that operations at the Douglas Plant had been suspended due to market conditions. On June 9, 2020, the company informed ADEQ that

the facility was operating in AOS-2 as detailed in the above section. During this period maintenance and inspection activities will be conducted in order to minimize the cost and time needed to reactivate the facility.

As of the issuance of this permitting action, the facility will remain in Alternative Operating Scenario-2 in which the quarry, crushing, and kiln operations are suspended and understands that any intent to restart the facility will require ADEQ to review if the source is subject to the EPA Reactivation Policy, evaluate whether New Source Review will be triggered, and determine if additional requirements apply.

#### IV. EMISSIONS

Pollutant	Emissions (tons per year)
PM	1,934.17
PM <sub>10</sub>	834.42
PM <sub>2.5</sub>	315.11
NO <sub>x</sub>	456.32
CO	275.16
SO <sub>2</sub>	4,420.66
VOC	10.90
GHG	253,470
HAPs	15.21

#### V. AREA SOURCE STATUS FOR HAZARDOUS AIR POLLUTANTS (HAPS)

On January 5, 2004, EPA promulgated the National Emissions Standard for Hazardous Air Pollutants (NESHAP) 40 Code of Federal Regulations (CFR) 63 Subpart AAAAAA for the lime manufacturing source category. The Final NESHAP regulates hazardous air pollutant (HAP) emissions from all new and existing lime manufacturing plants that are major sources for HAPs.

Lhoist North America conducted hydrogen chloride (HCl) emission testing for Kiln #2 at the Douglas Lime Plant. Based on this test the HCl emission from Kiln #2 was 7.02 tpy. Based on this result and HCl testing at kilns similar to Kiln #1 and Kiln #3 in other states, it is expected that the Douglas Lime Plant is an area source for HAPs.

In order to confirm that the Douglas Lime Plant is an area source of HAPs, it is necessary to test Kiln #1 and Kiln #3 for HCl emissions. Reactivating the kilns to solely test for HCl emissions would require significant expenditures. Consequently, EPA addressed this issue by providing state agencies with the discretion to determine whether testing of all kilns at a lime plant is necessary in order to demonstrate that a plant is an area source (40 CFR §63.7142(c)).

Based upon this EPA guidance, ADEQ is allowing Lhoist North America to postpone testing of the Kiln #1 and Kiln #3 for HCl until the kilns are reactivated.

**VI. APPLICABLE REGULATIONS**

<b>Emission Units</b>	<b>Control Device</b>	<b>Applicable Requirements</b>	<b>Comments</b>
<b>Limestone Processing Plant:</b>  Primary Crusher 102 Secondary Crusher 106	DC-120, DC-121	Arizona Administrative Code (A.A.C.) R18-2-702(B), A.A.C. R18-2-720(B)	This equipment processes limestone, and was manufactured prior to August 31, 1983, and therefore is subject to Article 7 standards.
Secondary Screen 110 Primary Screen 104	DC-122, Enclosure	Arizona Administrative Code (A.A.C.) R18-2-702(B), A.A.C. R18-2-720(B)  Paul Spur State Implementation Plan (PSSIP) 6.4	These screens were installed after August 31, 1983 (trigger date for New Source Performance Standards (NSPS) Subpart OOO). However, since these screens have been a like-like exchange in accordance with 40 CFR §60.670(d)(1) they are exempt from the requirements of Subpart OOO.  PSSIP 6.4 is applicable to all screens.  Condition II.B.2 of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition II.A of Attachment "B" are not subject to the NSPS.
#1 Secondary Screen #2 Secondary Screen #3 Secondary Screen	Enclosures	A.A.C. R18-2-702(B), PSSIP 6.4	This equipment processes limestone. These screens were all manufactured prior to August 31, 1983. Therefore, they are subject to A.A.C. R 18-2-702(B). PSSIP 6.4 requires all screens to be enclosed.

Emission Units	Control Device	Applicable Requirements	Comments
<b>Solid Fuel Handling System:</b>  #4 Fuel Bin, #4 Solid Fuel Mill	N/A	A.A.C. R18-2-702(B), A.A.C. R18-2-716(B)  PSSIP 6.1	These units were built after October 24, 1974. However, they cannot process more than 200 tons per day of solid fuel. Therefore, they are not subject to NSPS Subpart Y.  PSSIP 6.1 is applicable to conveyor belt transfer points.  Condition III.B.2.a of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition III.A of Attachment "B" are not subject to the NSPS.
Coal Hopper 503-1, Coal Hopper 503-2, Weigh Feeder 504, Weigh Feeder 505, Crusher 506, Solid Fuel Belt 507, Solid Fuel Bin 508, Solid Fuel Bin 515, Weigh Belt 516, Solid Fuel Mill 517	N/A	40 CFR §60.252, §60.254  PSSIP 6.1	These emission units were built after October 24, 1974, and can process more than 200 tons per day of solid fuel. Therefore, they are subject to NSPS Subpart Y.  PSSIP 6.1 is applicable to conveyor belt transfer points.

Emission Units	Control Device	Applicable Requirements	Comments
<b>Kiln 1 System :</b>  Kiln 1 Preheater Screen 211 Screen	Enclosures and Spray Bars	Arizona Administrative Code (A.A.C.) R18-2-702(B), A.A.C. R18-2-720(B)  PSSIP 6.4	<p>The Preheater Screen was installed after August 31, 1983 (trigger date for NSPS Subpart OOO). However, since these screens have been a like-like exchange in accordance with 40 CFR §60.670(d)(1) they are exempt from the requirements of Subpart OOO.</p> <p>PSSIP 6.4 is applicable to all screens.</p> <p>Condition V.C.2.e of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition V.A of Attachment "B" are not subject to the NSPS.</p>
Kiln 1	Cyclone and Gravel Bed Filter, DC-309	A.A.C. R18-2-720(B), A.A.C. R18-2-720(F), A.A.C. R18-2-702(B), PSSIP 6.5, Permit 0368-93/Attachment A Condition X(A)(1)  Kiln 1 is also subject to Compliance Assurance Monitoring (CAM) 40 CFR §64	Kiln 1 was installed in 1967, which is before the NSPS Subpart HH trigger date of May 3, 1977. Therefore, the kiln is an existing facility. PSSIP 6.5 requires the installation of a dust transfer and storage system for the existing Kiln 1 Dust Collector. The condition from Permit 0368-93 prescribes a five percent opacity limit on damper seal operations.
Kiln 1 Pug Mill	N/A	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A)	This equipment is applicable to unclassified existing sources.
BC 403	DC-403	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A)	This equipment is applicable to unclassified existing sources.
Dust Bin BN-320	DC-321	Installation Permit 1233 Att B (II)(B)(2)	-

Emission Units	Control Device	Applicable Requirements	Comments
<b>Kiln 2 System :</b>  Kiln 2 Scalping Screen 224	Enclosures	40 CFR §60.672, §60.675  PSSIP 6.4	The Scalping Screen was installed in 1995. The screen is an affected facility as defined by 40 CFR §60.670.  PSSIP 6.4 is applicable to all screens.
Kiln 2	Baghouse	A.A.C. R18-2-720(B), A.A.C. R18-2-720(F), A.A.C. R18-2-702(B)  Permit 0368-93/Att A IX(B), X(A)(1), X(A)(2)  Installation Permit 1233 Att B IV(1)  PSSIP 6.4  PSSIP 6.5  Kiln 2 is also subject to Compliance Assurance Monitoring (CAM) 40 CFR §64	Kiln 2 was installed in 1970, which is before the NSPS Subpart HH trigger date of May 3, 1977. Therefore, the kiln is an existing facility.  Kiln 2 damper seals < 5% opacity  PSSIP 6.5 is applicable to the dust transfer and storage system for Kiln 2 Baghouse.
Kiln 2 Product Cooler, Reject Belt 227, BC 404, Kiln 2 Dust Bin, and T-410 Bin	DC-228, DC-404, DC-524, DC-508	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A)  Permit 1001154	These are unclassified existing sources.
Kiln 2 Pug Mill	N/A	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A) Installation Permit 1233 Att "A", III; Att B III(A)	These are unclassified existing sources.

Emission Units	Control Device	Applicable Requirements	Comments
<b>Kilns 1 and 2 Lime Handling System :</b>  Rotary Lime Crusher R-405, Bin 401, Bin 402 & Screw 434, Bin 403 & Bin 405, BC 483, Spout 483, BC 486, Spout 486, BC 433, BC 485, BC 481	DC-401, DC-402, DC-406, DC-431, DC-481, DC-482, DC-483, DC-485, DC-486 and DC-487	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A), Installation Permit 031208, Permit 1000376, Installation Permit 1222	<p>The crusher processes lime. NSPS Subpart OOO A.A.C. R18-2-720, and A.A.C. R18-2-722 are applicable only to units that process limestone.</p> <p>Condition VII.B.2.A of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition VII.A of Attachment "B" are not subject to the NSPS.</p>
Roll Crusher R-451/Sealed Control, Hammermill R-452, Bin 406 & Seals, Spout 403 and Drop Points into Trucks from Bins 401, 402, 403, 404, 405, 406, 407 - Use Loading Sleeves/Enclosures	Seals, Enclosures and loading sleeves	A.A.C. R18-2-702(B)	<p>The crusher and hammermill process lime. NSPS Subpart OOO A.A.C. R18-2-720, and A.A.C. R18-2-722 are applicable only to units that process limestone.</p>
<b>Kiln 3 System :</b>  Kiln 3 Stone Screen and Stone Bin	Enclosures and DC-241	A.A.C. R18-2-702(B), A.A.C. R18-2-722(B)  PSSIP 6.4	<p>The Stone Screen was installed in 1980. This is prior to the NSPS Subpart OOO trigger date of August 31, 1983. Therefore, it is an existing facility subject to A.A.C. R18-2-722.</p> <p>PSSIP 6.4 is applicable to screens.</p> <p>Condition VIII.C.2.A and VIII.C.2.b of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition VIII.A of Attachment "B" are not subject to the NSPS</p>



Emission Units	Control Device	Applicable Requirements	Comments
Kiln 3	Wet Scrubber and DC-600	A.A.C. R18-2-720(B), A.A.C. R18-2-720(F), A.A.C. R18-2-702(B)  EPA Installation Permit issued on August 31, 1978, Condition VIII(B)  Installation Permit 1208  Permit 0368-93 Att A IX(B), X(A)(1)  PSSIP 6.4  Kiln 3 is also subject to Compliance Assurance Monitoring (CAM) 40 CFR §64	Kiln 3 is a vertical kiln - therefore, it is not subject to NSPS Subpart HH which is applicable only to rotary kilns. A.A.C. R18-2-720 is applicable to vertical kilns.
Kiln 3 Lime Crusher	DC-776	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A)	The crusher process lime. NSPS Subpart OOO A.A.C. R18-2-720, and A.A.C. R18-2-722 are applicable only to units that process limestone.
Kiln Discharge, Reject Conveyor & Product Conveyor, Large Bin & Kiln 3 Lime Screen, Truck Loadout, Dust Blend System Rail Loadout, Dust Blend System Truck Loadout, Dust Blend Bin	DC-730, DC-775 DC-776, DC-779 DC-852, DC-853 and DC-854	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A), PSSIP 6.4  Permit 1001154	These are unclassified existing sources. PSSIP 6.4 requires all screens to be enclosed.

Emission Units	Control Device	Applicable Requirements	Comments
Fugitive Dust Sources	Water Trucks and Dust Suppressants	A.A.C. R18-2-602, A.A.C. R18-2-604, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-614  PSSIP 6.1/Permit 0368-93 Attachment A Condition X(C)(1)  PSSIP 6.3/Permit 0368-93 Attachment A Condition X(C)(2)  PSSIP 6.6, 6.7, 6.8/Permit 0368-93 Attachment A Condition X(G), X(H)  Installation Permit 1233, Attachment B Condition II(B)(2)	All of these operations are non-point sources, and are subject to the requirements of Article 6.  PSSIP 6.1 is applicable to conveyor belt transfer points.  PSSIP 6.3 is applicable to stackers/reclaimers at storage piles.  PSSIP 6.6, 6.7, 6.8 are applicable to Cleared Areas, and Travel on Unpaved Roads.  The installation permit condition is an opacity standard of 10% applicable to belt conveyors, bucket elevators, and storage silos.
<b>Periodic Activities:</b>	Wet blasting, Dust collecting equipment, Enclosures and other approved methods	A.A.C. R18-2-726, A.A.C. R18-2-727, and A.A.C. R18-2-1101.A.8	Abrasive blasting, spray painting and asbestos related demolition or renovation are subject to these rules.

## VII. MINOR NSR REVIEW

There is no change in emissions. Minor NSR was not triggered.

## VIII. PREVIOUS PERMIT AND CONDITIONS

Table 1 compares the sections in Permit #61785 with the conditions in this renewal permit:

**Table 1: Previous Permit Conditions**

Section No.	Determination		Comments
	Revised	Delete	
Att. "A"	X		General Provisions: Revised to represent the most recent template language
Att. "B" Section I	X		Facility wide requirements: Revised to represent the most recent template language
Att. "B" Section XVI		X	

Section No.	Determination		Comments
	Revised	Delete	
Att. "C"	X		Equipment List: Revised to reflect the most recent equipment operating at the facility and to include equipment information provided.

## IX. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

### A. Facility-Wide

1. Along with the semiannual compliance certification, the Permittee is required to submit reports of all recordkeeping, monitoring and maintenance required by the permit.
2. The Permittee is required to maintain, on-site, records of the manufacturer's specifications or an Operation and Maintenance Plan for all equipment listed in the permit.

### B. Kilns 1, 2 and 3

Kiln 1 and Kiln 2 are required to comply with a particulate emission standard. Opacity is monitored by a Continuous Opacity Monitor (COM). One monitor is maintained on each stack. This permit requires Permittee to perform a stack test every year combined with monitoring stack gas opacity to fulfill the periodic monitoring requirements for particulate matter emissions. If corrective actions are taken to rectify the problems associated with the pollution control device, then compliance can be inferred on the basis that the source operates its pollution control equipment in a manner consistent with good air pollution control practices.

Kiln 3 is required to comply with opacity and particulate matter limits. Kiln 3 is controlled by a wet scrubber, and as such, an opacity monitor is not required pursuant to A.A.C. R18-2-720(G). The monitoring approach relies on the use of scrubber pressure drop and water flowrate as indicators of scrubber performance. Devices to continuously record these parameters have been installed. The Permittee is required to calibrate the devices on an annual basis. The water flow rate is required to be maintained above 90 gallons per minute. This volume is based on performance tests.

### C. Dust Collectors

The Control Device Monitoring and Maintenance Procedure defined in Condition I.C of Attachment "B" is used as periodic monitoring for dust collectors. Proper maintenance of dust collectors is critical to ensure compliance with the particulate and opacity standards applicable to these point sources. The Permittee is required to implement the maintenance program on a monthly basis. The Permittee is also required to implement the Visible Emissions Observation Procedure defined in Condition I.C of Attachment "B", once every two weeks.

### D. Housekeeping Plan

As required by the Paul Spur State Implementation Plan (PSSIP), the Permittee is required to implement a Housekeeping Plan to prevent accumulation of loose dust in the plant area. This Housekeeping Plan has been used by the Permittee for the past few years, and has been included in the permit in Attachment "D".

**E. Compliance Assurance Monitoring (CAM) Plan**

Lhoist Douglas is required to have a CAM plan in accordance with 40 CFR §64. The CAM plan required under Section XIII of Attachment "B" of the Permit applies to Kilns 1, 2 and 3 for the control of particulate matter.

1. Kiln 1 CAM Approach

Primary Indicators

- a. Opacity
- b. Gravel bed filter inspection and maintenance program

2. Kiln 2 CAM Approach

Primary Indicators

- a. Opacity
- b. Baghouse filter inspection and maintenance program

3. Kiln 3 CAM Approach

Primary Indicators

- a. Wet scrubber differential pressure

The differential pressure indicators shall be defined based on the most recent performance test of the wet scrubber as follows:

- (1) The minimum differential pressure is 70% of the average differential pressure
- (2) The maximum differential pressure is calculated by correlating the differential pressure to the PM limit.
- (3) The current minimum and maximum differential pressures are 1.3'' H<sub>2</sub>O and 5'' H<sub>2</sub>O respectively based on 1997 to 2000 performance tests.

- b. Wet scrubber inspection and maintenance program
- c. Wet scrubber water flow rate

- (1) The water flow rate shall be defined based on the most recent performance test of the wet scrubber by correlating the water flow rate to the maximum differential pressure.
- (2) Current minimum water flow rate is 90 gpm based on 1997-2000 performance test

**F. Fugitive Dust**

1. The Permittee is required to keep record of the dates and types of dust control measures employed.
2. The Permittee is required to show compliance with the opacity standards by having a Method 9 certified observer perform a monthly survey of visible emission from fugitive dust sources. The observer is required to conduct a 6-minute Method 9 observation if the results of the initial survey appear on an instantaneous basis to exceed the applicable standard.
3. The Permittee is required to keep records of the name of the observer, the time, date, and location of the observation and the results of all surveys and observations.
4. The Permittee is required to keep records of any corrective action taken to lower the opacity of any emission point and any excess emission reports.

**G. Periodic Activities**

1. The Permittee is required to record the date, duration and pollution control measures of any abrasive blasting project.
2. The Permittee is required to record the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.
3. The Permittee is required to maintain records of all asbestos related demolition or renovation projects. The required records include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

**X. TESTING REQUIREMENTS**

Annual performance tests for particulate matter shall be conducted on the Kiln 1, 2 and 3 stacks. The performance tests shall be conducted in accordance with EPA Reference Method 5.

**XI. COMPLIANCE HISTORY**

April 8, 2020: The facility filed a permit deviation due to the employees Method 9 certifications expiring. Employees were not able to complete the required 6-month re-certification training as the class was cancelled in response to the COVID-19 pandemic. Facility employees will attend training courses and re-certify to EPA Reference Method 9 as soon as it is deemed safe to do so and classes are made available in the area.

December 3, 2019: A full inspection was conducted. No issues were found.

November 2, 2017: A routine inspection was conducted. No issues were found.

November 23, 2015: A routine inspection was conducted. No issues were found.

Semi-annual compliance certifications: Ten compliance certifications have been submitted during the previous permit term.

There were no cases during the period of Permit No. 61785.

## **XII. LIST OF ABBREVIATIONS**

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
Btu/ft <sup>3</sup>	British Thermal Units per Cubic Foot
Btu/hr	British Thermal Units per Hour
CFR	Code of Federal Regulations
CO	Carbon Monoxide
FERC	Federal Energy Regulatory Commissions
HAP	Hazardous Air Pollutant
hp	Horsepower
lb/hr	Pound per Hour
NO <sub>x</sub>	Nitrogen Oxides
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter Nominally less than 10 Micrometers
SO <sub>x</sub>	Sulfur Oxides
VOC	Volatile Organic Compound